

# PATENT SPECIFICATION

709,824



Date of filing Complete Specification: Nov. 19, 1952.

Application Date: Aug. 20, 1951. No. 19615/51.

Complete Specification Published: June 2, 1954.

Index at acceptance:—Class 99(1), G18E.

## COMPLETE SPECIFICATION

### Improved method for joining the ends of Pipes of Polythene or other Thermoplastic Material

1. GEOFFREY RONALD CHRISTIAN, formerly of West Coverts, Ulgham, Morpeth, but now of Hazon, Acklington, both in Northumberland, a subject of the 5 Queen of Great Britain and Northern Ireland, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly 10 described in and by the following statement:—

This invention relates to a method for joining the ends of pipes of polythene or other thermoplastic material which can 15 be readily joined by butt-welding. It has hitherto not been possible to effect butt-welding of such pipes without causing a thickening of the pipe wall at the joint. The resulting internal bead or lip reduces 20 the bore of the pipe and retards the flow of liquid therethrough. As the pipes are usually of considerable length, it is not practicable to remove the internal bead after joining.

25 The object of the present invention is to provide an improved method of joining pipes of polythene or other thermoplastic material whereby to avoid the formation of an internal bead or lip at the joint.

30 According to my invention, I insert into the opposed ends of the two pipes to be butt-welded a lining of soluble material which is sufficiently heat-resistant to retain its shape during the welding operation and thereby prevent the formation of an internal bead or lip at the joint. The length of the soluble lining is such that, when it is inserted into the end of one pipe, it provides a spigot to receive the 35 end of the other pipe when they are butted together for welding. After welding, the lining is dissolved by passing a suitable liquid solvent through the pipes.

As applied to a pipe of circular section, 40 the soluble lining is of similar section and of an external diameter which renders it a

close fit in the end of the pipe and forms a guide which facilitates the positioning of the pipe to be joined thereto. The thickness of the lining need be no greater than is necessary to produce an article capable of withstanding conditions in use and the heat stresses occurring during the welding process which is effected with the lining in position and forming a connection between the ends of the two pipes to be joined. As the lining is sufficiently heat-resistant to retain its contour, the formation of a bead or lip of fused polythene or other thermoplastic material in the interior of the pipe is completely prevented and, when the lining has been subsequently dissolved, the bore of the joined pipes will be found to be regular throughout and without internal obstructions or ledges at the joints.

The material of which the soluble lining is composed is non-toxic and is preferably one which will dissolve without leaving any sediment. It may, for example, be a soluble carbohydrate such as sugar or it may be a starch compound, and a soluble binder such as albumin or glucose may be added, if desired. The lining may, however, be composed of a natural earth, such as Fullers' earth, and a soluble binder. The linings may be produced by extrusion or moulding.

Linings of sugar or starch compounds or of Fullers' earth can be readily dissolved, subsequent to butt-welding the ends of the pipes, by passing water through the joined pipes.

By the method herein described, I am able to join the ends of pipes of polythene and other thermoplastic material by welding without forming an internal bead or lip at the joint thereby avoiding the disadvantages which have hitherto been present.

What I claim is:—

1. A method for joining the ends of two

pipes of polythene or other thermoplastic material by butt-welding which consists in inserting into the opposed ends of said pipes a lining of soluble material which is sufficiently heat-resistant to retain its shape during the welding operation and thereby prevent the formation of an internal bead or lip at the joint.

2. A method according to claim 1 wherein the length of the soluble lining is such that, when it is inserted into the end of one pipe, it provides a projection to receive the end of the other pipe when they are butted together for welding.

3. A method according to claim 1 or 2 wherein the soluble lining is composed of a soluble carbohydrate.

4. A method according to claim 3 wherein the soluble lining is composed of sugar.

5. A method according to claim 1 or 2

wherein the soluble lining is composed of a starch compound.

6. A method according to claim 1 or 2 wherein the soluble lining is composed of a natural earth.

7. A method according to claims 4, 5 or 6 wherein a soluble binder is added to the material comprising the lining.

8. Joined pipes of polythene or other thermoplastic material the ends of which are butt-welded together without the formation of an internal bead or lip at the joint by the method claimed in any of the preceding claims.

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#### PROVISIONAL SPECIFICATION

#### Improved method for joining the ends of Pipes of Polythene or other Thermoplastic Material

I, GEOFFREY RONALD CHRISTIAN, of West Coverts, Ulgham, Morpeth, Northumberland, a subject of the Queen of Great Britain and Northern Ireland, do hereby declare this invention to be described in the following statement:-

40 This invention relates to a method for joining the ends of pipes of polythene or other thermoplastic material which can be readily joined by butt-welding. It has hitherto been impossible to effect butt-welding of such pipes without causing a thickening of the pipe wall at the joint. The resulting internal bead or lip reduces the bore of the pipe and retards the flow of liquid therethrough. As the pipes are 50 usually of considerable length, it is not possible to remove the internal bead after joining.

The object of the present invention is to provide an improved method of joining pipes of polythene or other thermoplastic material whereby to avoid the formation of an internal bead or lip at the joint.

According to my invention, I insert into the ends of the two pipes to be butt-welded a lining of soluble material which is sufficiently heat-resistant to retain its shape during the butt-welding operation and thereby prevent the formation of an internal bead or lip at the joint. The length 65 of the soluble lining is such that, when it is

inserted in the end of one pipe, it forms a projection to receive the end of the other pipe when they are butted together for welding. After welding, the lining is dissolved by passing a suitable liquid solvent through the pipes.

The material of which the soluble lining is composed is preferably such as to dissolve without leaving any sediment. It may, for example, be a sugar or starch compound, and a soluble binder may be added, if desired. It may, however, be composed of a natural earth, such as Fullers earth, and a soluble binder. The linings may be produced by extrusion or moulding.

Linings of sugar or starch compounds or of Fullers earth can be readily dissolved, subsequent to butt-welding the ends of the pipes, by passing water through the joined pipes.

By the method herein described, I am able to join the ends of pipes of polythene and other thermoplastic material without forming an internal bead or lip at the joint thereby avoiding the disadvantages which have hitherto been present.

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